

INFO 7470

Session 12 Updates

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April 25, 2016

Lab for Session 8

- Peer assessment of proposal
 - Due **April 25, 23:00 UTC (=7PM EDT)**

Lab for Session 10

- Posted on Friday, April 15
- First part (programming assignment)
 - due ~~April 22, 23:00 UTC~~ (=7PM EDT)
 - **EXTENDED to April 29, 23:00 UTC**
- Second part (peer assessment)
 - due ~~April 29, 23:00 UTC~~ (=7PM EDT)
 - **EXTENDED May 6, 23:00 UTC**
- Brief exercise follows

Last flipped class: Session 13

- GIS and Geographic Analysis
 - Guest lecturer Nicholas Nagle (University of Tennessee – Knoxville and NCRN node)
 - Posted 4PM EDT 2016-04-25 in edX
 - Please view before May 2, 2015 class.

IMPUTATION – A TOY EXAMPLE

Consider the following problem

- You have a dataset (say, for marketing) which only has
 - County of residence
 - Tulip purchases
- You are asked to give an estimate of the tulip consumption by **race**, because your boss believes that matters for marketing efforts

Your data

<i>PersonID</i>	<i>County of residence</i>	<i>Race</i>	<i>Tulip orders</i>
1	Baldwin County, Alabama	missing	3
2	Baldwin County, Alabama	missing	2
3	Baldwin County, Alabama	missing	6
4	Winnebago County, Wisconsin	missing	2
5	Winnebago County, Wisconsin	missing	7
6	Winnebago County, Wisconsin	missing	3
7	Winnebago County, Wisconsin	missing	1

Where to get race information?

- You download the 2014 ACS 1-year estimates
 - We will ignore for now uncertainty in the estimates

Advanced Search - Search all data in American FactFinder

1 Advanced Search

2 Table Viewer

Result 1 of 1

VIEW ALL AS PDF

DP05

ACS DEMOGRAPHIC AND HOUSING ESTIMATES ⓘ
2014 American Community Survey 1-Year Estimates

Table View

BACK TO ADVANCED SEARCH

Actions: [Modify Table](#) | [Add/Remove Geographies](#) | [Bookmark/Save](#) | [Print](#) | [Download](#) | [Create a Map](#)

View

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the estimates for states, counties, cities and towns and estimates of housing units for states and counties.

<< 3,251 - 3,268 of 3,268 >>

Versions of this table are available for the following years:

2014 ▶
2013
2012
2011
2010

Subject	Waukesha County, Wisconsin			Winnebago County, Wisconsin			Wood County, Wisconsin				Laramie County, Wyoming		
	Percent	Percent Margin of Error	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate	Margin of Error	Percent	Percent Margin of Error	Estimate	Margin of Error	Percent
SEX AND AGE													
Total population	395,118	(X)	169,511	*****	169,511	(X)	73,608	*****	73,608	(X)	96,389	*****	96,389
Male	49.4%	+/-0.1	86,086	+/-724	50.8%	+/-0.4	36,322	+/-288	49.3%	+/-0.4	47,870	+/-555	49.7%
Female	50.6%	+/-0.1	83,425	+/-724	49.2%	+/-0.4	37,286	+/-288	50.7%	+/-0.4	48,519	+/-555	50.3%
Under 5 years	5.0%	+/-0.1	9,318	+/-625	5.5%	+/-0.4	4,081	+/-291	5.5%	+/-0.4	6,366	+/-262	6.6%
5 to 9 years	6.4%	+/-0.4	9,859	+/-1,124	5.8%	+/-0.7	4,305	+/-560	5.8%	+/-0.8	7,652	+/-817	7.9%
10 to 14 years	6.6%	+/-0.4	10,442	+/-1,304	6.2%	+/-0.8	5,048	+/-564	6.9%	+/-0.8	5,156	+/-869	5.3%
15 to 19 years	6.9%	+/-0.2	11,464	+/-687	6.8%	+/-0.4	4,194	+/-151	5.7%	+/-0.2	5,634	+/-645	5.8%
20 to 24 years	5.3%	+/-0.2	14,944	+/-476	8.8%	+/-0.3	3,839	+/-140	5.2%	+/-0.2	6,572	+/-755	6.8%
25 to 34 years	10.4%	+/-0.2	22,224	+/-752	13.1%	+/-0.4	8,322	+/-316	11.3%	+/-0.4	14,586	+/-847	15.1%
35 to 44 years	12.0%	+/-0.2	20,485	+/-684	12.1%	+/-0.4	8,299	+/-251	11.3%	+/-0.3	11,637	+/-728	12.1%
45 to 54 years	15.9%	+/-0.2	23,556	+/-580	13.9%	+/-0.3	10,946	+/-236	14.9%	+/-0.3	12,123	+/-655	12.6%
55 to 59 years	8.0%	+/-0.4	12,285	+/-1,110	7.2%	+/-0.7	6,560	+/-730	8.9%	+/-1.0	6,563	+/-872	6.8%
60 to 64 years	6.9%	+/-0.4	9,743	+/-1,114	5.7%	+/-0.7	4,192	+/-743	5.7%	+/-1.0	6,203	+/-947	6.4%
65 to 74 years	9.0%	+/-0.1	13,320	+/-399	7.9%	+/-0.2	7,276	+/-208	9.9%	+/-0.3	8,334	+/-531	8.6%
75 to 84 years	5.3%	+/-0.3	8,556	+/-571	5.0%	+/-0.3	3,965	+/-679	5.4%	+/-0.9	4,220	+/-454	4.4%
85 years and over	2.2%	+/-0.3	3,315	+/-593	2.0%	+/-0.3	2,581	+/-674	3.5%	+/-0.9	1,343	+/-527	1.4%
Median age (years)	(X)	(X)	38.0	+/-0.6	(X)	(X)	43.5	+/-1.2	(X)	(X)	36.8	+/-0.8	(X)

Data

<i>County</i>	<i>Race</i>	<i>Estimate</i>	<i>MOE</i>	<i>Percent</i>	<i>Percent MOE</i>
Baldwin County, Alabama	White	175327	+/-1,828	87.6%	+/-0.9
Baldwin County, Alabama	Black or African American	20062	+/-503	10.0%	+/-0.3
Baldwin County, Alabama	American Indian and Alaska Native	2965	+/-780	1.5%	+/-0.4
Baldwin County, Alabama	Asian	2388	+/-109	1.2%	+/-0.1
Baldwin County, Alabama	Native Hawaiian and Other Pacific Islander	N	N	N	N
Baldwin County, Alabama	Some other race	3223	+/-1,759	1.6%	
Winnebago County, Wisconsin	White	158847	+/-1,501	93.7%	+/-0.9
Winnebago County, Wisconsin	Black or African American	4514	+/-288	2.7%	+/-0.2

D2				=C2/SUM(C\$2:C\$7)
	A	B	C	D
1	County	Race	count	<i>pct_count</i>
2	Baldwin County, Alabama	White	175327	0.859594
3	Baldwin County, Alabama	Black or African American	20062	0.098360
4	Baldwin County, Alabama	American Indian and Alaska Native	2965	0.014537
5	Baldwin County, Alabama	Asian	2388	0.011708
6	Baldwin County, Alabama	Native Hawaiian and Other Pacific Islander	0	0.000000
7	Baldwin County, Alabama	Some other race	3223	0.015802
8				
9	Winnebago County, Wisconsin	White	158847	0.922569
10	Winnebago County, Wisconsin	Black or African American	4514	0.026217
11	Winnebago County, Wisconsin	American Indian and Alaska Native	1517	0.008811
12	Winnebago County, Wisconsin	Asian	5199	0.030195
13	Winnebago County, Wisconsin	Native Hawaiian and Other Pacific Islander	0	0.000000
14	Winnebago County, Wisconsin	Some other race	2102	0.012208
15				

SUM ✕ ✓ fx =C2/SUM(C\$2:C\$7)				
	A	B	C	D
1	County	Race	count	pct_count
2	Baldwin County, Alabama	White	=C2/SUM(C\$2:C\$7)	
3	Baldwin County, Alabama	Black or African American	20062	0.098360
4	Baldwin County, Alabama	American Indian and Alaska Native	2965	0.014537
5	Baldwin County, Alabama	Asian	2388	0.011708
6	Baldwin County, Alabama	Native Hawaiian and Other Pacific Islander	0	0.000000
7	Baldwin County, Alabama	Some other race	3223	0.015802
8				
9	Winnebago County, Wisconsin	White	158847	0.922569
10	Winnebago County, Wisconsin	Black or African American	4514	0.026217
11	Winnebago County, Wisconsin	American Indian and Alaska Native	1517	0.008811
12	Winnebago County, Wisconsin	Asian	5199	0.030195
13	Winnebago County, Wisconsin	Native Hawaiian and Other Pacific Islander	0	0.000000
14	Winnebago County, Wisconsin	Some other race	2102	0.012208
15				
16				

E1		✕ ✓ <i>fx</i>		low_limit		
	A	B	C	D	E	F
1	County	Race	count	pct_count	low_limit	up_limit
2	Baldwin County, Alabama	White	175327	0.85959356	0.000000	0.859594
3	Baldwin County, Alabama	Black or African American	20062	0.09836001	0.859594	0.957954
4	Baldwin County, Alabama	American Indian and Alaska Native	2965	0.01453681	0.957954	0.972490
5	Baldwin County, Alabama	Asian	2388	0.01170789	0.972490	0.984198
6	Baldwin County, Alabama	Native Hawaiian and Other Pacific Islander	0	0	0.984198	0.984198
7	Baldwin County, Alabama	Some other race	3223	0.01580173	0.984198	1.000000
8						
9	Winnebago County, Wisconsin	White	158847	0.92256895	0.000000	0.922569
10	Winnebago County, Wisconsin	Black or African American	4514	0.0262169	0.922569	0.948786
11	Winnebago County, Wisconsin	American Indian and Alaska Native	1517	0.0088106	0.948786	0.957596
12	Winnebago County, Wisconsin	Asian	5199	0.03019532	0.957596	0.987792
13	Winnebago County, Wisconsin	Native Hawaiian and Other Pacific Islander	0	0	0.987792	0.987792
14	Winnebago County, Wisconsin	Some other race	2102	0.01220823	0.987792	1.000000
15						

G12

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fx

	A	B	C	D
1	<i>PersonID</i>	<i>County of residence</i>	<i>Race</i>	<i>Tulip orders</i>
2	1	Baldwin County, Alabama	missing	3
3	2	Baldwin County, Alabama	missing	2
4	3	Baldwin County, Alabama	missing	6
5	4	Winnebago County, Wisconsin	missing	2
6	5	Winnebago County, Wisconsin	missing	7
7	6	Winnebago County, Wisconsin	missing	3
8	7	Winnebago County, Wisconsin	missing	1

G12

✕

✓

fx

	A	B	C	D	E
1	PersonID	County of residence	Race	Tulip orders	Random number
2	1	Baldwin County, Alabama	missing	3	0.651863739
3	2	Baldwin County, Alabama	missing	2	0.806410295
4	3	Baldwin County, Alabama	missing	6	0.336269098
5	4	Winnebago County, Wisconsin	missing	2	0.962364338
6	5	Winnebago County, Wisconsin	missing	7	0.969568464
7	6	Winnebago County, Wisconsin	missing	3	0.032842226
8	7	Winnebago County, Wisconsin	missing	1	0.70475465
9					

	A	B	D	E	F
1	PersonID	County of residence	Tulip orders	Random number	Inputted race
2	1	Baldwin County, Alabama	3	0.29118959	White
3	2	Baldwin County, Alabama	2	0.593402407	
4	3	Baldwin County, Alabama	6	0.204338094	
5	4	Winnebago County, Wisconsin	2	0.754889982	
6	5	Winnebago County, Wisconsin	7	0.703980834	
7	6	Winnebago County, Wisconsin	3	0.233255137	
8	7	Winnebago County, Wisconsin	1	0.227125456	

A	B	C	D	E	F
County	Race	count	pct_count	low_limit	up_limit
Baldwin County, Alabama	White	175327	0.85959356	0.000000	0.859594
Baldwin County, Alabama	Black or African American	20062	0.09836001	0.859594	0.957954
Baldwin County, Alabama	American Indian and Alaska Native	2965	0.01453681	0.957954	0.972490
Baldwin County, Alabama	Asian	2388	0.01170789	0.972490	0.984198
Baldwin County, Alabama	Native Hawaiian and Other Pacific Islander	0	0	0.984198	0.984198
Baldwin County, Alabama	Some other race	3223	0.01580173	0.984198	1.000000
Winnebago County, Wisconsin	White	158847	0.92256895	0.000000	0.922569
Winnebago County, Wisconsin	Black or African American	4514	0.0262169	0.922569	0.948786
Winnebago County, Wisconsin	American Indian and Alaska Native	1517	0.0088106	0.948786	0.957596
Winnebago County, Wisconsin	Asian	5199	0.03019532	0.957596	0.987792
Winnebago County, Wisconsin	Native Hawaiian and Other Pacific Islander	0	0	0.987792	0.987792
Winnebago County, Wisconsin	Some other race	2102	0.01220823	0.987792	1.000000

E1	Random number					
	A	B	C	D	F	G
1	PersonID	County of residence	Race	Tulip orders	Fixed random number	Imputed race
2	1	Baldwin County, Alabama	missing	3	0.355110303	White
3	2	Baldwin County, Alabama	missing	2	0.924737234	Black or African American
4	3	Baldwin County, Alabama	missing	6	0.604774324	White
5	4	Winnebago County, Wisconsin	missing	2	0.379371631	White
6	5	Winnebago County, Wisconsin	missing	7	0.78917007	White
7	6	Winnebago County, Wisconsin	missing	3	0.877780692	White
8	7	Winnebago County, Wisconsin	missing	1	0.993301682	Some other race
9						

Five imputations

- Repeat the exercise another 4 times
 - With different seed!
 - Keep track of imputation (if stacking)
- Compute statistics according to formulae
- Toy example spreadsheet available on website